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EXAMINER	
CHERY, MARDOCHEE	
ART UNIT	**PAPER NUMBER**
2188	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/13/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/760,652	TIERNEY ET AL.	
	Examiner	Art Unit	
	Mardochee Chery	2188	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 October 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-35* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-34* is/are rejected.

7)☒ Claim(s) *35* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. This Office action is in reply to applicants' communication filed on October 16, 2006 in response to PTO Office Action mailed on July 25, 2006. Applicant's remarks and amendments to the claims and/or the specification were considered with the results that follow.

2. In response to the last Office Action, claims 34 and 35 have been amended. No claims have been added or canceled. As a result, claims 1-35 remain pending.

3. Claim 31 remains objected to as being dependent upon a succeeding claim.

4. The rejection of claim 33 under 35 USC 112 second paragraph has been withdrawn due to the amendment filed on October 16, 2006.

Response to Arguments

5. Applicant's arguments filed October 16, 2006 have been fully considered but they are not persuasive.

6. Applicant argues on page 8 of the remarks that "~~cipher~~ Cypher fails to teach or suggest a system that includes a node that can associate an F-state with a copy of data" recited in claim 1.

a. Examiner strongly disagrees since the prior art of record clearly discloses "a system that includes a node that can associate an F-state with a copy of data". Examiner would like to first make it clear that though the prior art must disclose the claimed invention in as complete detail as is contained in the claim, this is not however an ipsissimis verbis test, i.e., identity of terminology is not required. *In re Bond*, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990). Though the prior art may use terms similar to that of applicants' claimed invention, it also suffices that the prior art discloses the claimed subject matter at least in the manner recited in applicants' specification.

b. From page 6, TABLE 1, and paragraph [0034] of applicants' specification, the claimed F-state is simply described as "First among equals; the cache line is valid and unmodified by caching processor. Other processors may have valid copies, and caching processor may respond to snoops by returning data. The F-state corresponds to a shared cache line that can respond to requests for data with a response that includes a shared copy of the requested data". Likewise,

Cypher discloses "when a subsystem having a shared copy of data observes a coherence request for exclusive access to the block, its copy is typically invalidated; when a subsystem that currently owns a block of data observes a coherence request to that block, the owning subsystem typically responds by providing the data to the requestor and invalidating its copy; par. 0007; a directory containing shared copies of data and in response to coherency request for exclusive access to sharing subsystems; par. 0008; home agent 102 in the receiving home client detects the shared state for one or more other clients; since the slave agents 104 are each in the shared state, not the owned state, the home client 102 may supply the requested data directly to the requesting client; par. 0068".

c. Hum also discloses "an F-state permitting a shared data to be transmitted from the current owning system component to the requester; col. 3, ll 5-10; a First among equals; Col. 5, ll 57-67", described in TABLE 1 of applicants' specification.

7. Applicants argue on page 9, paragraph 1 of the remarks that Cypher fails to teach or suggest "a first node operative to provide a source broadcast requesting data".

Examiner strongly disagrees. Cypher discloses multiprocessing systems employing broadcast protocol where coherence requests are broadcast and if the system that currently owns a block (i.e., source) of data observes a coherency

request, the owning system responds by providing the data to the requestor; par. 0007.

8. Applicants argue on page 9, paragraph 2 of the remarks that neither Hum 756 nor Cypher teach or suggest "associating an F-state with a copy of the data in response to receiving the copy of the data from memory and receiving non-data response from other nodes in the system, the non-data responses including an indication that at least a second node includes as shared copy of the data".

Examiner strongly disagrees. As explained above and as detailed in the Office action mailed on July 25, 2006, the combination of Cypher and Hum 756 clearly discloses "associating an F-state with a copy of the data in response to receiving the copy of the data from memory and receiving non-data response from other nodes in the system". Cypher further discloses "the non-data responses including an indication that at least a second node includes as shared copy of the data" in at least par. [0068] where "a home agent detects the shared state for one or more other clients; since the slave agents are each in the shared state, the home client may supply the requested data directly to the requesting client; home agent transmitting invalidate coherency demands to each of the slave agents which are maintaining shared copies of the affected coherency unit; the invalidate coherency demand causes the receiving slave agent to invalidate the corresponding coherency unit within the slave".

9. Applicants argue on page 9, paragraph 3 of the remarks that "there is no proper motivation to combine the teachings of Cypher with those of Hum 756".

Examiner strongly disagrees with such contention. First off, Examiner would like to remind applicants that there are three possible sources for a motivation to combine references: the nature of the problem to be solved, the teachings of the prior art, and the knowledge of persons of ordinary skill in the art." *In re Rouffet*, 149 F.3d 1350, 1357, 47 USPQ2d 1453, 1457-58 (Fed. Cir. 1998). Furthermore, obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so >. *In re Kahn*, 441 F.3d 977, 986, 78 USPQ2d 1329, 1335 (Fed. Cir. 2006). Above all, the teaching, suggestion, or motivation must be found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. In our case, the motivation to combining the references was found in the references themselves and was skillfully exposed on pages 3-4, 6, 8-9, of the Office action mailed on July 25, 2006, which is also replicated below.

10. Applicants argue on page 10, paragraph 2 of the remarks that the system of Cypher fails to teach or suggest a system including non-data responses of claim 2, namely "non-data responses comprising an indication that the other nodes in the system do not have a copy of the data requested by the first node".

Examiner categorically disagrees with such assumption. Claim 2 simply recites "non-data responses comprising an indication that the other nodes in the system do not have a copy of the data requested by the first node" and similarly Cypher unequivocally discloses "in response to a coherency request, invalidation transactions may be conveyed to the sharing subsystems; par. 0008; and home agent sends invalidate coherency demands to all other slave agents; par. 0069".

11. Applicants argue on page 11, paragraphs 1-2 of the remarks that the system of Cypher uses point to point transactions, not broadcast transactions and thus Cypher does not teach claim 3 or "a source broadcast requesting the data comprising a non-ownership request for the data".

Examiner respectfully disagrees and would like to mention that applicants failed to consider, in its entirety, and have misconstrued the teaching of Cypher because throughout the entire disclosure, Cypher repeatedly enunciate that his invention deals with both broadcast and point to point transactions. Additionally, Cypher explained "home agent updates its directory to indicate that the requesting client is the owner and that each of the other clients is invalid; the invalidate demand causes the receiving slave to invalidate the corresponding coherency unit; [par. 0068]". Cypher further disclose that "the conveyance of the invalidation coherency demands may be considered a multicast, (hence broadcast); par. 0068".

12. Applicants argue on page 12, paragraph 1 of the remarks that "there exists no basis from Hum 047 that the mention of silent eviction described therein could be implemented by a cache controller for data stored in cache lines by modifying state information from an F-state to an invalid state", as allegedly recited in claim 7.

i. Claim 7 makes no mention whatsoever regarding the implementation of the F-state by the cache controller. Claim 7 simply states "the cache controller is capable of silently evicting the data stored in the one of the cache lines by modifying the state information from the F-state to an invalid state for the data". From page 6, TABLE 1, and paragraph [0034] of applicants' specification, the claimed F-state is simply described as "First among equals; the cache line is valid and unmodified by caching processor. Other processors may have valid copies, and caching processor may respond to snoops by returning data. The F-state corresponds to a shared cache line that can respond to requests for data with a response that includes a shared copy of the requested data. The F-state can be silently evicted (i.e., transitioning to the I-state with no copy being written to memory)".

ii. As already shown in the Office action mailed on July 25, 2006, Hum 756 identically discloses "a cache line in the F-state is used to respond to request for a copy of the cache; the newly created copy is placed in the F-state and the cache line previously in the F-state is put in the in the Invalid (I) state; Abstract; the F-state is used in a system where requests are

broadcast which means that the responses cannot be observed by all nodes in the system (hence silently evicting the data stored in the cache line) and the node having data stored in the F-state cannot have a unique copy because a valid copy is stored in memory; the F-state can be described as a "first among equals"; col. 5, ll 57-67".

iii. Furthermore, Hum 047 explicitly discloses the argued limitation verbatim in paragraph [0065], lines 6-8; "nodes can silently evict shared copies of a cache line, so the agent may not be aware that all copies have been evicted". It is worth mentioning that it's the combination of Cypher, Hum 756, and Hum 047 that is relied upon for the rejection of the claims in the Office action and thus its improper practice for applicants to challenge the rejection by attacking the references individually.

13. Applicants further argue on page 12, paragraph 2 of the remarks that "the rejection appear to be clear application of hindsight analysis".

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a

reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

14. Applicants' arguments on page 12, paragraph 5, regarding claim 35 are persuasive. As a result, the rejection of claim 35 under 35 USC 103 is withdrawn.

15. Applicants argue on page 13, paragraph 3 of the remarks that Arimilli fails to teach or suggest "transferring from a source broadcast protocol to an associated forward progress protocol in response to a request failing in the source broadcast protocol" and nothing in Arimilli suggests that "this change of coherency state involves a transfer to a forward progress protocol", allegedly recited in claim 11.

Examiner strongly disagrees with such contention and impugns applicants' position for that matter. It is manifest that Arimillli discloses at least in the manner described on page 2, paragraphs [0006-0007] and page 10, paragraph [0041] of applicants' specification, and as already stated on page 8 of the Office action of July 25, 2006, "a mechanism for making forward progress on retried snoop hilts involves undertaking an action, in response to detecting an operation on the system bus which was subject of a previous failed intervention, which moves the coherency state of a requested cache item toward the expected coherency state at the completion of the original operation; col. 6, ll 39-45".

16. Applicants' arguments on page 14, paragraph 2, with respect to claim 14, are identical in both form and substance to the arguments presented in regards to claim 1. Therefore, the response provided to the arguments directed to claim 1 in the paragraphs supra are referred herein regarding claim 14.

17. Applicants further argue on page 14, paragraph 2 of the remarks that Cypher and Hum fail to teach or suggest that a second that a second node becomes an ordering point of the system in response to receiving the shared copy of the data at least because Cypher and Hum fail to teach or suggest that ordering points migrate" allegedly recited in independent claims 1 and 14.

a. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., a second that a second node becomes an ordering point of the system in response to receiving the shared copy of the data and ordering points migrate) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

b. Additionally, Examiner would like to make it clear that Applicant is reading limitations of the specification into the claims to thereby narrow the scope of the claims by implicitly adding disclosed limitations which have no express basis in the claims. This is impermissible importation of subject matter from the

specification into the claim and such is not in accordance with USPTO rules and procedures. See MPEP 2111. See also *In re Morris*, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027-28 (Fed. Cir. 1997).

c. Applicants also argue on page 14, paragraph 2 of the remarks that Arimilli does not teach "the first state and third state are the same", recited in claim 19.

First of all, Examiner would like to consider those arguments as being peripheral. Moreover, Arimilli clearly discloses "action including altering the coherency state to a shared or invalid state; transition of the coherency state progress along a sequence terminating in the shared state; or transition progress along a sequence ending in the invalid state; col. 3, ll 17-25".

18. Applicants' arguments on page 15, with respect to claim 20, are identical in both form and substance to the arguments presented in regards to claims 1 and 14. Therefore, the response provided to the arguments directed to claim 1 in the paragraphs supra are referred to herein regarding claim 14.

19. Applicants argue on page 16, paragraph 2 of the remarks that Cypher does not teach the system of claim 21 because "none the other nodes responds to the broadcast request with a response indicating that the at least one other processor does not include a valid copy of the desired data" allegedly recited in claim 1.

Examiner strongly disagrees with such contention. Cypher unequivocally describes how "a home agent marks a requestor as the sole owner of the line and sends an RTO demand to the owning slave agent; home agent also sends invalidate coherency demands to all other slave agents with a shared copy; the owning slave agent reply with data to the requesting agent and invalidates its copy; paragraph [0069]".

20. Applicants' arguments, with respect to claim 29, that Cypher fails to disclose that "a home node for the requested data, the system further comprising means from blocking the home node from responding with the data to another request" appear to be rather tenuous.

Cypher skillfully disclose "coherency activity in response to a read-to-own request when a slave agent is the current owner of the coherency unit and other slave agents have shared copies of the coherency unit; the request agent initiates the transaction by sending a read-to-own request to home agent; this causes home agent to block new transactions to this coherency unit; home agent marks the requestor as the sole owner of the line and sends invalidate coherency demands to all other slave agents with a shared copy; paragraph [0069]".

21. In view of the foregoing, it has been shown that the claimed invention is not patentably distinct over the combination of Cypher, Hum 756, Hum 047, and Arimilli. Additionally, applicants should eschew reading limitations of the specification into the

claims and holding the cited art to the ipsissimis verbis test, i.e., identity of terminology is not required. Furthermore, in response to the Office action, applicants are advised to carefully study and review the cited art of record, and amend the claims to further compact prosecution. Hence, the rejection of claims 1-34 is indeed strictly maintained and reiterated below with claim 35 objected to as being allowable for depending on a rejected base claim.

Claim Rejections - 35 USC § 103

22. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

23. Claims 1-6, 8-9, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cypher (2004/0002992) in view of Hum (6,922,756).

As per claim 1, Cypher discloses a system comprising: a first node operative to provide a source broadcast requesting data [Fig. 2A, ¶¶ 7, ll 1-7], the first node associating an F-state with a copy of the data in response to receiving the copy of the data from memory and receiving non-data responses from other nodes in the system [¶¶ 7, ll 7-13; ¶¶ 8, ll 9-14; ¶¶ 68, ll 4-22], the non-data responses including an indication that at least a second node includes a shared copy of the data [¶¶ 68; ll 1-11], the F-

state enabling the first node to serve as an ordering point in the system [Fig. 1; ¶¶ 75-76].

As per claim 1, Cypher does not specifically teach an F-state capable of responding to requests from the other nodes in the system with a shared copy of the data as required.

Hum discloses an F-state capable of responding to requests from the other nodes in the system with a shared copy of the data [col. 3, ll 6-11; col. 5, ll 66 to col. 6, ll 1] to permit a shared data to be transmitted from the current owning system component to the requesting system component without any concern of multiple data copies received at the requesting system component [col. 3, ll 7-9].

Since the technology for implementing a cache memory system with an F-state capable of responding to requests from the other nodes in the system with a shared copy of the data was well known as evidenced by Hum, an artisan would have been motivated to implement this feature in the system of Cypher to permit a shared data to be transmitted from the current owning system component to the requesting system component without any concern of multiple data copies received at the requesting system component. Thus, it would have been obvious to one of ordinary skill in the art at the time of invention by Applicant to modify the system of Cypher to include an F-state capable of responding to requests from the other nodes in the system with a shared copy of the data since this would have permitted a shared data to be transmitted from the current owning system component to the requesting system component

without any concern of multiple data copies received at the requesting system component [col. 3, ll 7-9] as taught by Hum.

As per claim 2, Cypher discloses the non-data responses further comprise an indication that the other nodes in the system do not have a copy of the data requested by the first node [¶¶. 69].

As per claim 3, Cypher discloses the source broadcast requesting the data comprises a non-ownership request for the data [Fig. 4; ¶¶ 68; ll 1-9].

As per claim 4, Cypher discloses the non-ownership request comprises a source broadcast read request [¶¶. 7; ll 1-3, 10-16; ¶¶ 68].

As per claim 5, Cypher discloses the first node comprises a first processor having an associated cache that comprises plurality of cache lines, one of the cache lines having an address associated with the copy of data received from memory and state data that defines the state of the data stored in the one of the cache lines [Fig. 4].

As per claim 6, Cypher discloses the first processor further comprises a cache controller that controls the state of the data stored in the plurality of cache lines [Fig. 2A].

As per claim 8, Cypher discloses each node defines a processor having an associated cache that comprises a plurality of cache lines, each cache line having a respective address that identifies associated data and state information that indicates a state of the associated data for the respective cache line, each of the processors being capable of communicating with each other via an interconnect [Fig. 2A].

As per claim 9, Cypher discloses a cache controller associated with each cache for managing data requests and responses for the respective cache [Fig. 2A; *Controllers 210A-210B*].

As per claim 13, Cypher discloses the ordering point defined by the F-state migrates from the first node to another node in response to the another node issuing a source broadcast non-ownership request for a copy of the data [pars. 75-76; Fig. 1].

24. Claims 7, 10, and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cypher (2004/0002992) in view of Hum (6,922,756) and further in view of Hum (2004/0123047).

As per claim 7, Hum discloses the cache controller is capable of evicting the data stored in the one of the cache lines by modifying the state information from the F-state to an invalid state for the data [Abstract; col. 5, ll 57-65].

However, Cypher and Hum do not specifically teach silently evicting the data stored in the one of the cache lines as required.

Hum (2004/0123047) discloses silently evicting the data stored in the one of the cache lines [par. 65, ll 6-8] so the agent may not be aware that all copies have been evicted (par. 65, ll 7-10).

Since the technology for implementing a cache system with silently evicting the data stored in the one of the cache lines was well known as evidenced by Hum (047), an artisan would have been motivated to implement this feature in the system of Cypher and Hum (756). Thus, it would have been obvious to one of ordinary skill in the art at the time of invention by Applicant to modify the system of Cypher and Hum (756) to include silently evicting the data stored in the one of the cache lines since this would have enabled the agent not be aware that all copies have been evicted (par. 65, ll 7-10) as taught by Hum (047).

As per claim 10, the rationale in the rejection 7 is herein incorporated.

As per claim 31, the rationale in the rejection of claim 7 is herein incorporated.

25. Claims 11, 12, 14-15, 17-30, and 32-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cypher (2004/0002992) in view of Hum (6,922,756) and further in view of Arimilli (6,138,218).

As per claim 11, Cypher and Hum (756) disclose the claimed invention as discussed above in the previous paragraphs. However, Cypher and Hum (756) do not specifically teach the system implements a source broadcast protocol to process requests and responses provided by nodes within the system, the system transferring to an associated forward progress protocol in response to a request failing in the source broadcast protocol as required.

Arimilli discloses the system implements a source broadcast protocol to process requests and responses provided by nodes within the system, the system transferring to an associated forward progress protocol in response to a request failing in the source broadcast protocol [col. 6, ll 39-45 and 54-64] to obviate the need for subsequent interventions (col. 6, ll 48-50).

Since the technology for implementing a cache memory system with the system implementing a source broadcast protocol to process requests and responses provided by nodes within the system, the system transferring to an associated forward progress protocol in response to a request failing in the source broadcast protocol was well known as evidenced by Arimilli, an artisan would have been motivated to implement this feature in the system of Cypher and Hum (756) in order to obviate the need for subsequent interventions. Thus, it would have been obvious to one of ordinary skill in the art at the time of invention by Applicant to modify the system of Cypher and Hum (756) to include a source broadcast protocol to process requests and responses provided by nodes within the system, the system transferring to an associated forward

progress protocol in response to a request failing in the source broadcast protocol since this would have helped obviated the need for subsequent interventions (col. 6, ll 48-50) as taught by Arimilli.

As per claim 12, Arimilli discloses the forward progress protocol comprises a directory-based protocol [col. 1, ll 35-40].

As per claim 14, the rationale in the rejection of claims 1 and 3 is herein incorporated.

However, Cypher and Hum (756) do not specifically teach transitioning from the first state to a second state indicating that the data is shared; and the second node transitioning to a third state in response to receiving the shared copy of the data from the first node, such that the second node becomes an ordering point in the network for providing a shared copy of the data as required.

Arimilli discloses transitioning from the first state to a second state indicating that the data is shared [col. 5, ll 60-67]; and the second node transitioning to a third state in response to receiving the shared copy of the data from the first node, such that the second node becomes an ordering point in the network for providing a shared copy of the data [col. 6, ll 1-15] to make forward progress towards an ultimate state on retried snoop operations (col. 1, ll 10-15).

Since the technology for implementing a cache memory system with transitioning from the first state to a second state indicating that the data is shared was well known

as evidenced by Arimilli, an artisan would have been motivated to implement this feature in the system of Cypher and Hum (756) in order to make forward progress towards an ultimate state on retried snoop operations. Thus, it would have been obvious to one of ordinary skill in the art at the time of invention by Applicant to modify the system of Cypher and Hum (756) to include transition from the first state to a second state indicating that the data is shared since this would have made forward progress towards an ultimate state on retried snoop operations (col. 1, ll 10-15) as taught by Arimilli.

As per claim 15 the rationale in the rejection of claim 5 is herein incorporated.

As per claim 17 the rationale in the rejection of claim 11 is herein incorporated.

As per claim 18, Cypher discloses the forward progress protocol comprises a directory-based protocol [par. 7, ll 1-5].

As per claim 19, Arimilli discloses the third state and the second state are the same [col. 3, ll 17-25].

As per claim 20, the rationale in the rejection of claims 1 and 14 is herein incorporated.

As per claim 21, Cypher discloses at least one other processor having an associated cache that does not include a valid copy of the desired data, the at least one other processor responding to the broadcast request with a response indicating that the at least one other processor does not include a valid copy of the desired data [¶¶. 69].

As per claim 23, the rationale in the rejection of claim 3 is herein incorporated.

As per claim 24, the rationale in the rejection of claim 4 is herein incorporated.

As per claim 25, the rationale in the rejection of claim 11 is herein incorporated.

As per claim 26, the rationale in the rejection of claim 20 is herein incorporated.

As per claim 27, Cypher discloses the means for enabling defines an ordering point in the system for responding to non-ownership requests for the data, the system further comprising means for migrating the ordering point from the first node to another node in the system in response to a non-ownership request for the data provided by the another node [pars. 75-76].

As per claim 28, the rationale in the rejection of claim 11 is herein incorporated.

As per claim 29, Cypher discloses the memory comprises a home node for the requested data, the system further comprising means for blocking the home node from responding with data to another request if the first node provides a response to the another request that includes a shared copy of the data [Fig. 4; ¶¶ 68; ll 1-9].

As per claim 30, the rationale in the rejection of claim 26 is herein incorporated.

As per claim 32, Cypher discloses moving the ordering point for the data from the source node to another node in response to a non-ownership request for the data provided by the another node [pars. 75-76].

As per claim 33, the rationale in the rejection of claim 5 is herein incorporated.

As per claim 34, the rationale in the rejection of claim 11 is herein incorporated.

26. Claims 16 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cypher (2004/0002992) in view of Hum (6,922,756), Arimilli (6,138,218), and further in view of Hum (2004/0123047).

As per claim 16, the rationale in the rejection of claim 10 is herein incorporated.

As per claim 22, the rationale in the rejection of claim 16 is herein incorporated.

Allowable Subject Matter

27. Claim 35 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

28. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

29. When responding to the office action, Applicant is advised to clearly point out the patentable novelty that he or she thinks the claims present in view of the state of the art disclosed by references cited or the objections made. He or she must also show how the amendments avoid such references or objections. See 37 C.F.R. 1.111(c).

30. When responding to the Office action, Applicant is advised to clearly point out where support, with reference to page, line numbers, and figures, is found for any amendment made to the claims.

31. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mardochee Chery whose telephone number is (571) 272-4246. The examiner can normally be reached on 8:30A-5:00P.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hyung Sough can be reached on (571) 272-6799. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

March 8, 2007

HYUNG SOUGH
SUPERVISORY PATENT EXAMINER
3-12-07

Mardochee Chery
Examiner
AU: 2188